

OPARIN, A. I. (Moskva)

Present status of the problem of the origin of life. Usp. sov. biol.
44 no.2:158-172 S-O '57. (MIRA 10:1)
(LIFE--ORIGIN)

20-2-30/50

AUTHORS: Cparin, A. I., Academician, Deborin, G. A., and Baranova, V. Z.

TITLE: The Influence of Desoxyribonucleic Acid on the Breaking Down of Proteins by Trypsin (Vliyaniye dezoksiribonukleinovoy kisloty na rasshchepleniye belkov tripsinom)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 2, pp. 270 - 272 (USSR)

ABSTRACT: The influence exerted by substances from the above-mentioned group on the enzymatic activity in in-vitro-tests drew the attention of scientists upon itself during recent years. After a survey of publications the authors state that the interaction mechanism of nucleic acids with the enzymatic proteins was hitherto not sufficiently solved. The formation of complexes is assumed whose components are connected with each other by means of electrostatic interaction, hydrogen binding, Van der Waals's forces or a co-valent chemical bond. The authors studied the influence of a highly-polymeric deoxyribonucleic acid (called DNS in the following) on the proteolytic process under conditions above the isoelectric point, i.e. when the interaction of DNS with the enzyme does not lead to precipitation. DNS was produced from the thyroid gland of calves.

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The Influence of Deoxyribonucleic Acid on the Breaking Down of Proteins by Trypsin

Its molecular weight was $0,8 - 1,4 \cdot 10^6$. Crystalline trypsin was produced according to Kunitz & Nortrop. The test method is described. Figure 1 shows the curve of proteolysis by trypsin of serum albumin, eg; albumen and casein, together with control curves. In the case of individual substrata this process is markedly inhibited. In order to determine the nature of the process of inhibition in the presence of DNS, the influence of a previous incubation with DNS with an enzyme or with a substratum on the course of proteolysis was investigated. Figure 2 shows the data obtained from a test of this series. The curves show that a rapid inhibition only takes place in the case of a previous incubation of the substratum with DNS, and not of the enzyme with DNS. On the basis of the test results the conclusion may be drawn that DNS influences only the substratum and not the enzyme. In the case of a large excess of DNS, e.g. in the relation DNS : serum albumin = 1 : 0,6 and 1 : 0,5 no further inhibition is caused, although the increase in this relation up to this value increased the inhibition. In the case a very large excess of serum albumin over DNS, inhibitions of proteolysis were observed. As high-polymeric nucleic acids are highly capable of interaction with proteins, an investigation was made of the influence exerted by the polymerism of DNS on the

Card 2/3

20-2-30/50

The Influence of **Desoxyribonucleic Acid** on the Breaking Down of Proteins by Tryp-
sin

course of the proteolysis of casein by trypsin. Figure 3 shows that the strongest inhibition of the proteolysis took place when DNS with the highest molecular weight was used. The smallest inhibition was obtained when a DNS was used that had been treated with deoxyribonuclease. It was already earlier proved that enzymatic processes outside the organism may depend on the presence of small amounts of lipoids which form complexes with proteins. The totality of these and the above-mentioned factors indicates a great variety of the manners of regulation in a system so complicated and rich in components as the cell. There are 3 figures and 12 references, 3 of which are Slavic.

ASSOCIATION: Institute for Biochemistry **Imeni A. N. Bakha, AN SSSR**
(Institut biokhimii im. A. N. Bakha Akademii nauk SSSR)

SUBMITTED: June 26, 1957

AVAILABLE: Library of Congress

Card 3/3

OPARIN. AI

DECLASSIFIED

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON ENZYME ACTIVITY, Tokyo & Kyoto, 1967
ADHOC: Organising Committee, International Symposium on Enzyme Chemistry, Tokyo, Maruzen, 1968.

40

The Action of Enzymes Included in Coacervate Drips

J. J. OPARIN

Institute of Biochemistry, Academy of Sciences, Moscow, U.S.S.R.

It is already known a considerable part of living cell
activity is more or less tightly bound to phospholipid
membranes. The membranes are not only the site of
enzymes, but also the place where the products of their
action are stored. The membranes also affect the character of
the enzyme activity. But the conditions created for
the action of enzymes in a relatively homogeneous medium
also probably differ from what we observe in
the natural systems of enzymes included in living
cells.

As far as its chemical nature the phospholipid in a
coacervate is not so different from that in a natural
membrane. It was interesting to investigate the
action of separate enzymes included in artificially ob-
tained coacervates.
The phospholipid inclusion appeared to be quite possible
in the presence of the enzymes. But this
was not the case. The inclusion was not observed
in our own investigations with J. Yeats,
M. J. Shubert, M. N. Nechaev and I. Lapina. The
phospholipid inclusion was observed only in coacervates
obtained by the method of J. Yeats and I. Lapina.
It is necessary to bear in mind that depending on their
composition, they can give with water relatively strong
suspensions of phospholipid. The phospholipid in
the coacervate is not so different from that in a
natural membrane. It was interesting to investigate the
action of separate enzymes included in artificially ob-
tained coacervates.

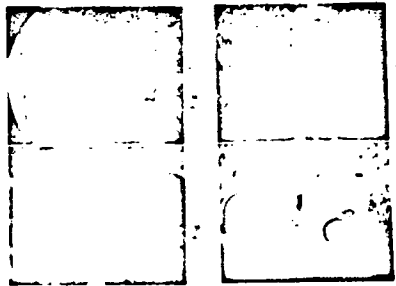


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Further investigations showed that activity of enzymes
in coacervates is not so different from that in a natural
membrane. It was interesting to investigate the
action of separate enzymes included in artificially ob-
tained coacervates. The phospholipid inclusion
appeared to be quite possible in the presence of the
enzymes. But this was not the case. The inclusion
was not observed in our own investigations with
J. Yeats, M. J. Shubert, M. N. Nechaev and I. Lapina.
The phospholipid inclusion was observed only in
coacervates obtained by the method of J. Yeats and
I. Lapina. It is necessary to bear in mind that
depending on their composition, they can give with
water relatively strong suspensions of phospholipid.
The phospholipid in the coacervate is not so
different from that in a natural membrane. It was
interesting to investigate the action of separate
enzymes included in artificially obtained coacervates.

CHAI IN, A. I. (Moscow)

"Nucleinsäuren in Popperset-Transfer."

Int. J. Biochem. 1: 1-6, 1958, London, 1958

paper presented at the 4th Intl. Congress of Biochemistry, Vienna, 1-6 Sep 58.

OPARIN, Aleksandr Ivanovich, akademik; DEBORIN, Gavriil Abramovich, kand.
Khim. nauk; BENYUMOV, O.M., red.; SAVCHENKO, Ye.V., tekhn. red.

[Present-day science on the origin of life on earth; results of
the International Symposium on the Origin of Life in Moscow,
August 19-24, 1957] Sovremennaiia nauka o vzniknovenii zhizni na
Zemle; k itogam Mezhdunarodnogo simpoziuma po proiskhozhdeniu
zhizni, sostoiavshegosia v Moskve 19-24 avgusta 1957 goda. Moskva,
Izd-vo "Znanie," 1958. 34 p. (Vsesoiuznoe obshchestvo po raspro-
straneniu politicheskikh i nauchnykh znani. Ser. 8, vyp.1. no.5).
(Life--Origin) (MIRA 11:9)

DZHEMUKHADZE, Konstantin Melitonovich; ~~OPARIN, A.I.~~, akademik, red.;
SHTERNBERG, M.B., red. izd-va; POLENOVA, T.P., tekhn.red.

[Principles of biochemical control in tea production] Osnovy
biokhimicheskogo kontrolya chainogo proizvodstva. Moskva,
Izd-vo Akad. nauk SSSR, 1958. 167 p. (MIRA 11:12)
(Tea)

KRETOVICH, Vatslav, Leonovich; OPARIN, A.I., akademik, otv.red.; ANTONYUK,
L.D., red.izd-va; SHEVCHENKO, G.N., tekhn.red.

[Biochemistry of grain and bread] Biokhimiia zerna i khleba.
Moskva, Izd-vo Akad.nauk SSSR, 1958. 172 p. (MIRA 12:2)
(Grain) (Flour)

BOKUCHAVA, Mikhail Alekseyevich, prof., doktor biologicheskikh nauk,;
OPARIN, A.I., akad., otv. red.; BUNDEL', A.A., red. izd-va,;
PRUSAKOVA, T.A., tekhn. red.

[Biochemistry of tea and tea production]. Biokhimiia chaja i chainogo
proizvodstva. Moskva, Izd-vo Akad. nauk SSSR, 1958. 536 s.
(MIRA 11:12)

(Tea)

NEMCHENKO, V.S.; BOCHAROV, M.D.; KRISTOSTUR'YAN, N.G.; CHERKASOV, V.I.;
ANDREYANOV, V.V.; KAUFMAN, V.M.; PAKHMANOV, V.F.; ZVORYKIN, A.A.,
otv.red.; ANICHKOV, N.N., red.; BARDIN, I.P., red.; BLAGONRAVOV,
A.A., red.; VVEDENSKIY, B.A., red.; GRIGOR'YEV, A.A., red.;
KAPUSTINSKIY, A.F., red.; KOLMOGOROV, A.N., red.; MIKHAYLOV, A.A.,
red.; OPARIN, A.I., red.; PETROV, P.M., red.; STOLETOV, V.N., red.;
STRAKHOV, N.M., red.; FIGUROVSKIY, N.A., red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of leaders in the natural sciences and
technology] Biograficheski slovar' deiatelei estestvoznaniia
i tekhniki. Vol.1. A - L. Otvetstvennyi red. A.A.Zvorykin. Red.
kollegiia: N.N.Anichkov i dr. Moskva, Gos.nauchn.izd-vo "Bol'shaia
Sovetskaisa Entsiklopediia." 1958. 548 p. (MIRA 12:4)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sovetskoy
Entsiklopedii (for Nemchenko, Bocharov, Kristostur'yan, Cherkasov,
Andreyanov, Kaufman, Pakhmanov).

(Scientists)

AUTHOR: Oparin, A.I., Academician SCV-26-98-3-1031

TITLE: The Present State of the Problem of the Origin of Life (Sovremennoye sostoyaniye problemy proiskhozhdeniya zhizni)

PERIODICAL: Priroda, 1958, Nr 3, pp 11-16 (USSR)

ABSTRACT: This article presents a theory on the origin of life. According to this theory, life developed in the following three stages: 1) the emergence of hydrocarbons and their closest derivatives, (D.I. Mendeleev has shown that hydrocarbons develop from the interaction of carbides with water); 2) the emergence of numerous complicated and high-molecular organic compounds, among them the albuminoid substances; 3) the emergence of the albumin system endowed with metabolism. Further development of the atmosphere and hydrosphere of the earth resulted in various and also very complicated substances found in present organisms. The Institut biokhimi AN USSR (Institute of Biochemistry of the AS USSR) experimentally obtained amino acids by irradiating hydrocarbons with ultra-

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SOV-96-98-10-10

The Present State of the Problem of the Origin of Life

violet light.

Title: Origin of Life

1 Biology--Theory

Card 2/2

OPARIN, A.I., akademik

Reports at the conference dedicated to the 25th anniversary of the foundation of the Institute of Microbiology of the Academy of Sciences of the U.S.S.R. Introductory address at the anniversary session of June 20, 1955. Trudy Inst. mikrobiol. no.5:3-5 '58 (MIRA 11:6)
(MICROBIOLOGICAL RESEARCH)

AUTHOR: Oparin, A. L., Member, Academy of Sciences 29-58-5-b/26

TITLE: From Matter to Existence (Ot veshchestva k sushchestvu)

PERIODICAL: Tekhnika Molodezhi, 1958, Nr 5,
pp 12 - 13 (USSR)

ABSTRACT: It 's quite understandable, says the author, that everybody should put himself the question where living beings originate. Based on modern conceptions three stages can be formed through which development from matter to the creation of life passed. The first stage is the formation of such organic substances from which the structures for all plants, animals and microbes are formed without exception. The second stage results in those most complex organic compounds formed of hydrocarbons which now form the composition of living matter: albumen, nucleic acids, porphyrine and other high-molecular compounds which represent the basic substance for the formation of the living cell. Finally the third stage: it is a process in which the complex organic compounds form such systems which can be justly designed as the most primitive beings. When, in 1924, the author picked up the subject of the creation of life there

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From Matter to Existence

29-58-5-10/26

existed the opinion that the original formation of the most simple organic substances under natural conditions was not possible. This was justified insofar as the research was restricted to the conditions existing on the earth. By extending the investigations also to other celestial bodies the result was somehow different. At present it is generally known that in the formation of the earth an interplanetary gas-dust-matter served as a basis. It also seems to be proved that during the formation of the earth a completely different atmosphere was surrounding it than is now the case. The investigation of radioactive isotopes shows that the age of the earth since its formation to a planet can be estimated to be about 4-5 billion years. At the same time the investigations of sulfur isotopes showed that the earth entered into an oxidation state from a reduction state about 700-800 billion years ago. Of special interest is the problem how and under which conditions of the original earth atmosphere the albumins could form. They are the basic substances of any living organism and are at the same time the main participants, directors and regulators of those processes representing life.

Card 2/4

From Matter to Existence

23 325-10/26

Chemistry has made great progress in the investigation of albumins. The possibilities of the primary formation of amino acids on the conditions existing during the formation of the earth and during the first stages of existence were experimentally proved. The Japanese scientist Sh. Akabori recently stated a new idea, namely that the albumins could be formed from the predecessors of the amino acids. This opinion was proved by experiments. Today it can be assumed with certainty that the abiogenous formation of the most complex substances took place in the waters of the original ocean or in other waters. Therefore also the second stage seems to be basically solved. The most important sign of life is one of the forms of motion of matter, the metabolism of albuminous substances - interaction of the organism with its surrounding world. It is important to find out how this characteristic feature of living-matter organic metabolism could form. The mechanism of separating albuminous, lipoid and other substances in form of coacervate drops is at present investigated in detail and can be traced experimentally. The coacervate albumin drop can react with the surrounding medium. Therefore a synthesis of new

Card 3,4

From Matter to Existence

29-58 5-10/26

substances can take place in it. Besides this process also a reversely directed process - the decomposition of the substances of the coacervate drop - can be observed. In the process of the expansion of organized matter a new rule was formed which cannot be found in physics, but represents a characteristic for biological objects. The process investigated showed that the coacervate drops became more and more perfect and adjusted to outer conditions. As final results of this process they transformed into such systems in which the coincidence between the decomposition and the synthesis, between assimilation and dissimilation, became perfect. This is characteristic for that form of motion of matter called life. There are 7 figures.

1. Biology--Theory 2. Organic materials--Synthesis

Card 4/4

OPARIN, A. I.

AUTHOR: None Given

0 W-26-88-8-14 51

TITLE: Lectures (Delivered) by Soviet Scientists at the Brussels Exhibition (Lektsii sovetskikh uchenykh na Bryussel'skoy vystavke)

PERIODICAL: Priroda, 1958, Nr 8, p 116 (USSR)

ABSTRACT: In August 1958, the greatest Soviet scientists will deliver lectures on the achievements of science in the USSR at the Brussels Fair. In the field of natural sciences the following will lecture: the academicians Semerov, N.N. on Chain Reactions in Chemistry, V.N. Kondratyev on Soviet Works on Mass-Spectroscopy, A.P. Vinogradov on the Biochemistry of Isotopes, A.V. Shubnikov on the Growth of Crystals, N.S. Shatskiy on the Tectonic Map of the USSR, A.I. Oparin on the Present State of the Problem on the Origin of Life, Tsitsin, N.V. on Problems of Distant Hybridization, I.V. Tyurin on Soils of the Soviet Union and their Utilization. The following lectures will be delivered by correspondent-members AS USSR N.M. Emanuel' on New Investigations in the Field of Chain Reactions, Andrianov, K.A. on Silicorganic Compounds, Ye.K. Zavoyskiy on Phenomena of Electron Paramagnetic Resonance, I.M. Frank on the Application of Atomic Energy for Peaceful Purposes, V.I. Popkov on a Unique Ener-

Card 1/2

SOV-26-58-8-74/51

Lectures (Delivered) b, Soviet Scientists at the Brussels Exhibition

getic System in the USSR. The delivered lectures will be available in English, French, Flemish and German as individual brochures.

1. Scientific Reports--USSR
2. Scientific personnel--Performance
3. Scientific personnel--USSR

Card 2/2

OPARIN, A.I.

International Symposium on the Problem of the Origin of Life.
Izv. AN SSSR Ser. biol. 23 no.2:240-244 Mr-Apr '58. (MIRA 11:4)
(LIFE--ORIGIN--CONGRESSES)

OPARIN, A.I., GEL'MAN, N.S., ZHUKOVA, I.G., LUK'YANOVA, M.A.

Interrelation of the enzyme activity of the di- and tricarboxylic acid cycle and the proteoplast structure of *Micrococcus lysodeikticus* [with summary in English]. *Biokhimiia* 23 no.6:909-916 N-D '58 (MIRA 11:12)

1. Institut biokhimii imeni A.N. Bakha AN SSSR, Moskva.
(OXIDATION, PHYSIOLOGICAL)

OPARIN, A.I., akademik

From matter to living substance. Tekh.mol. 26 no.5:12-15 '58.

(MIRA 11:5)

(Life--Origin)

OPARIN, A.I., akademik.

Present status of the problem of the origin of life. Priroda 47
no.3:11-16 Mr '58. (MIRA 11:3)
(Life--Origin)

AUTHORS: ~~Oparin, A. I.~~, Member, Academy of Sciences, USSR, Sezebrovskaya, K. B., Bardinskaya, M. S. 20-120-6-41/59

TITLE: A Study of Ribonuclease Activity in the Presence of Gum Arabic
(Izucheniye aktivnosti ribonukleazy v prisutstvii gumiarabika.)

PERIODICAL: Doklady **Akademi** nauk SSSR, 1959, Vol 120, Nr 6,
pp 1311 - 1313 (USSR)

ABSTRACT: The problem of the ferment mentioned in the title was studied by means of ribonucleic acid (RNA) in continuation of the investigations (Ref 1) on the interaction between proteins and polysaccharins started by the author and in connection with the formation of coacervates the ferment preparation yielding coacervates under certain conditions. In this connection it was of interest to determine the activity of the ribonuclease and to investigate the reaction in coacervate systems. As is known lysine (the terminal amino acid ribonuclease molecule, Ref 2) shows a slight interaction with carbon hydrates (Refs 3 - 5) It was necessary to find out whether a loss of activity of the ferment takes place. The results of the preliminary experiments are given on table 1. It can be seen from it that under the

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A Study of Ribonuclease Activity in the Presence of
Gum Arabic

20-120-6-41/59

presence of gum arabic not only the capability of the ferment to precipitate by protein precipitators changes (in accordance with Ref 13) but also its activity remains more constant against heating to 40°. Further experiments at low temperatures (2°) showed that the ferment cannot be precipitated by means of protein precipitators (trichloroacetic acid, picric acid, tannin). This could not be achieved even after from 6 - 8 hours at from 18 - 20°. The data on the determination of activity of the ferment and of the complex after a 24 hours incubation at 2° are given on table 2. It can be seen from it that the presence of the polysaccharide retains the activity of the ferment. This is also the case with yeast invertase (Refs 14, 15). There are 1 figure, 2 tables, and 16 references, 6 of which are Soviet.

ASSOCIATION: Institut biokhimi im. A.N. Bakha Akademii nauk SSSR (Institute of Biochemistry imeni A. N. Bakha, AS USSR)

SUBMITTED: March 14, 1956

Card 2/3

AUTHORS: Chapin, A. I., Moscow, U.S.S.R. Shchegolev, S. R., Sverdlovsk, U.S.S.R.

TITLE: The Effect of Ritonolene Emulsed in Concentrate Drops (Deystviye ritonoleny, vlyuzheny v koncentraty)

PERIODICAL: Doklady Akad. Nauk SSSR, 1981, Vol. 251, No. 1, pp. 1-3 (USSR)

ABSTRACT: The formation of concentrate drops from diluted solutions of protein-lipid and other compounds of high molecular weight can be regarded as a very important step in the evolution of the most advanced forms of the genesis of the primitive organism. The protolipids of the most primitive organisms are concentrate quality lipids. As contrast with the artificial lipid emulsions concentrate drops in a fixed system, whereas the natural drops represent an open system. The stability of the protolipid emulsions is related to the chemical processes which are continuing in the system. In order to study the stability of the emulsions, the authors have conducted experiments on the stability of the emulsions, vlyuzheny v koncentraty...

The Effect of Ribonuclease on the Enzyme in *S. aureus* (Dr. J. S. D. 317, 1961, p. 101)

was found that the enzyme activity of the ribonuclease (RNase) was inhibited by the presence of ribonucleic acid (RNA) in the reaction mixture. This inhibition was observed in the presence of both native and synthetic RNA. The effect of RNase on the RNA was studied in the presence of various ions, such as calcium (Ca²⁺) and magnesium (Mg²⁺). The results showed that the activity of the enzyme was inhibited by the presence of RNA, and this inhibition was reversed by the addition of calcium ions. It was also found that the enzyme activity was not affected by the presence of magnesium ions. The possibility of the enzyme being a ribonuclease was suggested. Further, it was intended to explore how the enzyme is affected in the presence of proteins and polysaccharides. Studies of polymerase were also made, RNA-ribonuclease (RNase), (1) RNase, (2) RNase, (3) RNase, (4) RNase, (5) RNase, (6) RNase, (7) RNase, (8) RNase, (9) RNase, (10) RNase. It was found that in the presence of the enzyme, the RNA was degraded and the enzyme activity was inhibited. This suggests that the enzyme is a ribonuclease.

Carl D. J.

The Effect of Reasonable Error in the Determination of the S.W. of the

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SUMMARY: July 11, 1950

Card 3.5

OPARIN, Aleksandr Ivanovich, akademik; DEBORIN, G.A., kand.khim.nauk,
red.; KADER, Ya.M., red.izd-va; ANIKINA, R.F., tekhn.red.

[Origin of life] Proiskhozhdenie zhizni. Moskva, Voen.izd-vo
M-va oborony SSSR, 1959. 125 p. (MIRA 12:10)
(Life--Origin)

SARYCHEV, Boris Georgiyevich; OPARIN, A.I., akademik, retsenzent;
PRONIN, S.I., spetsred.; BAZARNOVA, V.M., spetsred.;
MURASHEVA, O.I., red.; SOKOLOVA, I.A., tekhn.red.

[Production and biochemistry of rye bread] Tekhnologia
i biokhimiia rzhanogo khleba. Moskva, Pishchepromizdat,
1959. 197 p. (MIRA 13:1)
(Rye) (Bread)

PHASE I BOOK EXPLOITATION SOV/3493

Vsesoyuznyye soveshchaniya po filosofskim voprosam yestestvoznaniya
 Filosofskiyeproblemy sovremenogo yestestvoznaniya: truly sovesh-
 chaniya... (Philosophic Problems of Modern Natural Science)
 Transactions of the All-Union Conference on Philosophical Problems
 of Natural Science Moscow, Izd-vo AN SSSR, 1959. 663 p.
 Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Ed. of Publishing House: A.I. Komanetskiy, Tech. Ed. I.N. Dorokhina;
 Editorial Committee: P.M. Fedoseyev, Corresponding Member, Academy
 of Sciences USSR (Chairman), B.M. Vul, Corresponding Member,
 Academy of Sciences USSR, V.M. Gerasimov, Corresponding Member,
 Academy of Sciences USSR, V.N. Stoletov, Professor, and Ye.N. Chernobov,
 Candidate of Philosophical Sciences (Scientific Secretary)

PURPOSE: This book is intended for natural scientists and philosophers
 who are interested in coordinating communications of philosophy with science.
 COVERAGE: This is a publication of the transactions of the All-Union
 Conference on Philosophical Problems of Natural Science which took
 place in Moscow, October 25-26, 1958. The Conference was
 attended by 20 academicians and 30 corresponding members of the
 Academy of Sciences USSR, 15 academicians and 34 members of re-
 sults of scientific research institutes, and 75 party and
 officials. The purpose of the Conference, as expressed by its
 Chairman of the Organization Committee, K.V. Ostrovskiy, was
 to unite the efforts of Soviet philosophers and scientists in
 the dialectical-materialistic interpretation of the achievements
 of modern science, and to provide the philosophical background
 required for the study of modern scientific problems.

- Kutin, M.B., Academician. A Great Ideological Instrument for the
 Investigation and Transformation of the Universe (Comparing the
 the 50th Anniversary of the Completion of V.I. Lenin's Book
 Materialism and Empirio-criticism) 12
- Omel'yanovskiy, N.E., Academician, AS USSR V.I. Lenin and the
 Philosophical Problems of Modern Physics 32
- Aleksandrov, A.D., Corresponding Member, AS USSR. Philosophic
 Content and Significance of the Theory of Relativity 93
- Kedrov, B.M., Professor. Relationships Between the Differen-
 tial and Integral Calculus 137
- Fok, V.A., Academician. Interpretation of Quantum Mechanics 212
- Sobolev, S.L., Academician, and A.A. Lyapunov, Professor. Cybernetics
 and Natural Science 217
- Abshatsumyan, V.A., Academician. Certain Methodological Problems
 of Cosmogony 268
- Zrunko, G.M., Corresponding Member, Academy of Medical Science
 USSR, and V.A. Engel'gardt, Academician. Role of Physiological
 Chemistry in the Study of Ecological Problems 291
- Gyuris, A.I., Academician. Problem of the Origin of Life in the
 Light of the Achievements of Modern Science 294
- Grashchikov, M.I., Corresponding Member, AS USSR. Problems of
 Reflection and the Modern Philosophy of the Sense Organ 301

DISCUSSION OF REPORTS

Shurokov, M.P., Professor
 Card 4, 11

OPARKIN, A. I.

Chemist, Ye. E., Candidate of Philosophical Sciences
Sov'et Nauk, 1959, No. 59-1-47/57
Problems Concerning Philosophy of Modern Natural Science (Filosofskie
voprosy sovremennoy yestestvoznaniya)

NO(O)
APR 1961
SERIAL

PERIODICAL
ABSTRACT

Yevgeniy Aleksandrovich ZHEKIN, 1959, No. 59-1-126 (USSR)
At the end of October last year an All-Union conference took
place which dealt with the problems of the philosophy of science
concerned by the Academy of Sciences and the Academy of Sciences
of the USSR (Akademiya Nauk SSSR) (Ministry of Higher
Education of the USSR). More than 600 well-known experts in
the sphere of science...
...representatives of the Academies of the Union Republics
and Branch Academies as well as scientists from scientific
research institutes and universities-- scientific representa-
tives from Bulgaria, Rumania, Germany, Hungary and Czechoslo-
vakia... It was the aim of the conference to
write the articles... of Soviet philosophers and scientists
for the purpose of disseminating the generalization
of the achievements of modern scientific generalization
which is intended to contribute towards reaching the level
of the achievements of modern scientific generalization of the great
importance of the problems in the history of science...
Such were the ideas expressed by Academician M. I. Baryshnikov,
President of the AS USSR and K. V. Ostrovitskiy, Chairman
of the Committee for the Organization of the Conference on the
occasion of their opening speeches.

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Further, the following reports were heard and discussed:
B. B. Ritsin, Academician, spoke about Lenin's "materialism and
dialecticism" as the great ideological weapon for the
transformation of the world.
K. E. Oshchepkov, Academician of the AS USSR, dealt in
his report with V. I. Lenin and the philosophical problems of
modern physics.
B. A. Kabanov, Doctor of Philosophical Sciences, Corresponding
Member, Academy of Pedagogical Sciences USSR, reported on the
interrelation in nature of the forms of movement of substances.
V. A. Pavlov spoke about the interpretation of quantum mechanics.
A. B. Aleksandrov, Corresponding Member, Academy of Sciences,
USSR, spoke about the philosophical meaning and the importance
of the theory of relativity.
B. L. Sobolev, Academician, and A. A. Buzinov, Professor,
dealt with cybernetics and natural science.

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A. A. Ishakbayev, Academician, spoke about some methodical
problems of cosmology.
L. E. Eshel'ev, Academician, and G. M. Frank, Corresponding
Member, AS USSR reported on the role of physics and chemistry
in the solution of biological problems.
A. A. Oshchepkov, Academician, spoke about the formation of life
in the light of the achievements of modern science.
B. I. Grishchenko's report dealt with the Lenin's theory
and modern physiology of the animal organs.
A. E. Zhuravskiy opposed the opinion expressed by K. E. Oshchep-
kov that in the capitalist countries a crisis
in physics is approaching.

11

OPAR 19 11

30(9)
AUTHOR:

None Given
All-Union Conference on Philosophic Problems of Modern Natural Science (Pecherovskiy, S. M. (Ed.), *Problemy sovetskogo prirodovedeniya* [Soviet Science Problems] By the Editor [Otkrytyy])

TITLE:

PERIODICAL:

ABSTRACT:

Supskhi filosofskikh nauk, 1959, Vol 68, Nr 4, pp 777-778, 783
The above conference took place at Moscow in October 1959. It was attended by more than 600 scientists, among them 70 Academicians and 30 Corresponding Members, 43 USSR, as well as delegates from Bulgaria, Hungary, East Germany, and Czechoslovakia. The following lectures delivered at the conference are listed: Academician M. E. Zhukov (on Lenin's work "Materialism and Empirio-criticism"); Academician I. M. Prigodnyy (on the Philosophy of Science and the Philosophy of Nature); Academician V. A. Izrael (on the Philosophy of Quantum Mechanics); already published in *Spektr* (Interpretation of Matter in Nature); Academician V. A. Izrael (Interpretation of Quantum Mechanics) - already published in *Spektr* (Interpretation of Matter in Nature), Vol 62, Nr 4; Corresponding Member AS USSR A. B. Alekseev (The Philosophical Content of and the

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Significance of the Theory of Relativity"; Academician I. A. Lebedevskiy (The Philosophical Problems of Cosmology); Academician Y. A. Izrael and Professor A. A. Lyapunov (Cosmology and Natural Science); Corresponding Member AS USSR G. M. Frank and Academician Y. A. Izrael (On the Part Played by Physics and Chemistry in the Investigation of Biological Problems); Academician A. I. Dmitriyev (The Problem of the Origin of Life in the Light of the Progress Made by Modern Natural Science); and, finally, Corresponding Member AS USSR N. I. Zhukovskiy (Lenin's Theory of Reflection and the Modern Physiology of the Sensory Organs). About 600 delegates took part in the conference. The President of the USSR, Academician A. S. Novikov, is reproduced, and we is the closing speech by Corresponding Member AS USSR P. N. Fedoseyev, and finally a resolution passed by the All-Union Conference on philosophical problems of modern natural science is given under the title "On the Tasks of dealing with Philosophical Problems of Natural Science". The resolution essentially contains an appeal for the

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investigation of all new scientific facts in the sense of the theory of Marx and Lenin and of dialectic materialism; the adaptation of ideas to the conditions of the 20th century; the strengthening of institutions of coordination of research work as well as the coordination of organization. In conclusion, a list of printed works is given, in which the lectures delivered during the conference were published. There are 8 Soviet references.

Card 3/3

OPARIN, A.I., akademik, red.; BRAUNSHTEYN, A.Ye., red.; PASTYNSKIY, A.G.,
prof., red.; PAVLOVSKAYA, T.Ye., kand.biolog.nauk. red.; ZHAMEN-
SKAYA, M.P., red.izd-va; BUNDEL', A.A., red.izd-va; POLERIOVA,
T.P., tekhn.red.

[Origin of life on the earth; transactions of the international
symposium of August 19-24, 1957, in Moscow] Vozniknovenie zhizni
na zemle; trudy mezhdunarodnogo simpoziuma 19-24 avgusta 1957 goda,
Moskva. Moskva, Izd-vo Akad.nauk SSSR, 1959. 671 p. (MIRA 12:12)

1. Deyatvitel'nyy chlen ~~AMN~~ SSSR (for Braunshteyn).
(LIFE--ORIGIN--CONGRESSES)

OPARIN, A. I.

"The Problem of the Spontaneous Generation and the Origin of Life on the Earth."

report to be submitted for the Intl. Symposium of Experimental Biology,
Reggio Emilia, Italy, 2-7 May 1959.

Biochemical Inst, Acad. Sci. USSR

BELOZERSKIY, Andrey Nikolayevich; OPARIN, A.I., akademik, otv.red.;
POTAKHINA, N.A., red.isd-va; MARKOVICH, S.G., tekhn.red.

[Nucleoproteids and nucleic acids in plants and their
biological significance] Nukleoproteidy i nukleinovye
kisloty rastenii i ikh biologicheskoe znachenie. Moskva,
Isd-vo Akad.nauk SSSR, 1959. 45 p. (MIRA 12:6)
(Nucleic acids) (Nuclein) (Botanical chemistry)

AUTHOR: Oparin, A. I., Academician SOV/26-59-1-17/34

TITLE: Technical Biochemistry in the Food Industry (Tekhnicheskaya biokhimiya v pishchevoy promyshlennosti)

PERIODICAL: Priroda, 1959, Nr 1, pp 40 - 43 (USSR)

ABSTRACT: The author outlines past and present theories of human nutrition. He points out that recent concepts of the metabolic processes in the human body are bound to reflect strongly on the selection of food to be recommended and its processing to obtain maximum values. Vitamins are of paramount importance and will be incorporated also into such basic victuals which by their very nature contain little to no vitamins. Vitamins are also thought to be of value in removing undesired side effects of antibiotics. Vegetable fats are to be preferred to animal fats. This is to be considered in the cultivation plans for agriculture. These concepts are similarly applicable to feeding and fattening problems in animal husbandry. Vitaminized food gives a far greater yield than conventional food. Rele-

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Technical Biochemistry in the Food Industry

SOV/26-59-1-17/34

vant research and experiments were conducted over the past 3 years by the Institut biologii AN Latvii SSR (Institute of Biology of the AS of the Latvian SSR), the Latviyskiy institut zhivotnovodstva i veterinarii (Latvian Institute of Livestock **Breeding** and Veterinary Problems) and the Institut biokhimii AN SSSR (Institute of Biochemistry of the AS USSR) in cooperation with the industry for combined feeds. Thus, the Rizhskiy zavod (Riga Plant) enriched cattle feed with vitamins and micronutrient substances and determined the resulting nutritious effectiveness. Similar investigations are being conducted on the effect of ferments on foodstuffs and their possible use in food processing, in order to establish a special ferment industry. Thus, the addition of 20 grams of a preparation of fungous amylase to 1 ton of white flour improved greatly the sugar content, volume, porosity, taste, flavor

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Technical Biochemistry in the Food Industry

SOV/26-59-1-17/34

and color of the crust of the bread prepared from
the enriched flour. There is 1 photograph.

ASSOCIATION: Institut biokhimii im. A.N. Bakha AN SSSR /Moskva
(The Institute of Biochemistry imeni A.N. Bakh of
the AS USSR /Moscow)

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OPARIN, A. I., akademik

Biochemistry serves the people. Zdorov'e 5 no.11:6-8
N '59. (MIRA 13:3)
(BIOCHEMISTRY) (FOOD—PRESERVATION)

GEL'MAN, N.S.; ZHUKOVA, I.G.; LUKOYANOVA, M.A.; OPARIN, A.I.

Succinic oxidase and malic oxidases in structural elements of
Micrococcus lysodeikticus. Biokhimiia 24 no.3:481-488
My-Je '59. (MIRA 12:9)

1. Institute of Biochemistry, Academy of Sciences of the
U.S.S.R., Moscow.

(MICROCOCCUS, metab.
lysodeikticus, succinic & malic oxidases (Rus))
(SUCCINIC OXIDASE,
in Micrococcus lysodeikticus (Rus))
(OXIDASES,
succinic oxidase in Micrococcus lysodeikticus
(Rus))

OPARIN, A.I.

Problems of technical biochemistry in the field of the food industry.
Biokhimiia 24 no.5:769-776 S-0 '59. (MIRA 13:2)
(FOOD PROCESSING INDUSTRY)

GEL'MAN, N.S.; ZHUKOVA, I.G.; OPARIN, A.I.

Effect of a surface active substance on the enzymatic system oxidizing malic acid in cytoplasmic membranes of *Micrococcus lysodeikticus*. *Biokhimiia* 24 no.6:1074-1078 N-D '59.

(MIRA 13:5)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R., Moscow.

(MICROCOCCUS metab.)

(MALATES metab.)

(SURFACE ACTIVE AGENTS pharmacol.)

17(2,3)
AUTHORS:

SOV/29-126-1-54/62
Gel'man, N. S., Zhukova, I. G., Qparin, A. I., Academician

TITLE:

The Effect of Desoxyribonuclease on the Oxidation of Malonic Acid by the Lysates of Micrococcus Lyodeikticus (Vliyaniye dezoksiribonukleazy na okisleniye vablochnoy kisloty lizatami bakteriy Micrococcus lyodeikticus)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 198-199 (USSR)

ABSTRACT:

Malic oxidase - a fermentative system which oxidizes malonic acid, is of considerable resistance as far as the disturbance of the protoplasmic structure is concerned. This system is localized in the cytoplasmic membranes - the "shadows". Such shadows can be obtained by treating the protoplasts, the bacteria mentioned in the title, with water, as well as by a direct lysis of the same bacteria in an osmotically unstabilized medium (Refs 1,2). The effect of the malonic oxidase is completely stopped due to the splitting of the highly molecular desoxyribonucleic acid (DNA) present in the lysate - by means of desoxyribonuclease (DNA-ase) - into cytoplasmic membranes which the lysate did not separate. This is expressed by

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SOV/20-126-1-54/62

The Effect of Desoxyribonuclease on the Oxidation of Malonic Acid by the Lysates of *Micrococcus Lyodeikticus*

the fact that the oxygen absorption is stopped by the lysate at the expense of the malonic acid (Ref 1). The present work tries to explain a relation between the development of the DNA in the lysate containing cytoplasmic membranes, and the activity of the system of oxidative-reductive ferments. For the purpose of explaining the cause for the suppression of the activity of malic oxidase in lysates treated with DNA-ase and RNA-ase, the authors quantitatively defined this activity from the oxygen absorption. The preparations were observed simultaneously under the electron microscope (Fig 1). The lysis of the bacteria with lysozym DNA-ase and RNA-ase was made with both Mg-ions being either present or absent (Fig 1). As the results show, lysozym in an osmotically unstabilized medium causes the development of lysates containing cytoplasmic membranes. The active malic oxidase is maintained in these membranes. Their effect can be found by O₂-absorption. Lysis caused by lysozym together with DNA-ase completely suppresses the fermentative system mentioned. Magnesium ions

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The Effect of Desoxyribonuclease on the Oxidation of Malonic Acid by the Lysates of *Micrococcus Lyodeikticus*

stabilize not only the structure of the cytoplasmic membranes, but also the malic oxidase. The experiments proved that the DNA splitting of the bacterial lysate neutralizes the effect of the malic oxidase. Since this effect is maintained even in the presence of Mg-ions, although the Mg-ions do not prevent the fermentative splitting of DNA, it is most probable that DNA creates a spatial organization of the fermentative system of the malic oxidase on a supra-molecular level. An analogy to reference 8 may be seen. There are 1 figure, 1 table, and 8 references, 3 of which are Soviet.

SUBMITTED: February 16, 1959

Card 3/3

OPARIN, Aleksandr Ivanovich; BENSON, A.H., red.

[Origin of life on earth; album] Vozniknovenie zhizni na Zemle;
al'bom. Moskva, Izd-vo "Sovetskaya Rossiya." 1960. 47 plates
(MIRA 14:5)

(Life--Origin)

OPARIN, Aleksandr Ivanovich, akademik; SHAROVATOVA, I.B., red.izd-va;
VOLKOVA, V.V., tekhn.red.

[Life, its nature, origin, and evolution] Zhizn', ee priroda,
proiskhozhdenie i razvitie. Moskva, Izd-vo Akad.nauk SSSR,
1960. 191 p. (MIRA 14:3)
(Life)

KUBIN, Boris Anisimovich; ARTSIKHOVSKAYA, Yelena Vladimirovna;
OPARIN, A.I., akademik, otv.red.; SHAROVATOVA, I.B., red.
isd-vs; YEGOROVA, N.F., tekhn.red.

[Biochemistry and physiology of immunity in plants] Biokhi-
miia i fiziologiya immuniteta rastenii. Moskva, Izd-vo Akad.
nauk SSSR, 1960. 350 p. (MIRA 14:2)
(Plants--Disease and pest resistance)

MIKHLIN, David Mikhaylovich; GPARIN, A.I., akademik, otv.red.; MAKAROVA,
O.V., red.izd-vs; GUS'KOVA, O.M., tekhn.red.

[Biochemistry of cell respiration] Biokhimiia kletochnogo
dykhaniiia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 414 p.
(MIRA 14:1)

(RESPIRATION) (CELL METABOLISM)

KHOLLICHER, Val'ter [Hollitscher, Walter]; AKCHURIN, I.A. [translator];
ARKHANGEL'SKIY, N.S. [translator]; MOGHALIN, D.N. [translator];
OMEL'YANOVSKIY, M.E., akademik, red.; OPARIN, A.I., akademik, red.;
MASEVICH, A.G., doktor fiziko-matem.nauk, red.; OVCHINNIKOV, N.F.,
kand.filosof.nauk, red.; TYURYUKANOV, A.N., kand.biolog.nauk, red.;
GAL'PERIN, P.Ya., dotsent, red.; URYSON, M.I., kand.biolog.nauk,
red.; MAKAROV, A.A., red.izd-va; ZOTOVA, N.V., tekhn.red.

[Nature in the scientific picture of the world] Priroda v nauchnoi
kartine mira. Obshchaya red. i vstupitel'naya stat'ia M.E.
Omel'yanovskogo. Moskva, Izd-vo inostr.lit-ry, 1960. 469 p.
(MIRA 14:3)

1. AN USSR (for Omel'yanovskiy).
(Science--Philosophy)

DEBORIN, G.A.; IVANOVA, V.P.; OPARIN, A.I.; WLODI, P.

Effect of ergosterol on the enzymatic activity of phosphoglyceraldehyde dehydrogenase. Acta physiol.hung 17 no.2:133-140 '60.

1. Institut biokhimii A.E. SSSR, in Bakha, Moskva, i Institut biokhimii A.N. Vengrii, Budapesht.

(DEHYDROGENASES metab.)

(VITAMIN D pharmacol)

GEL'MAN, N.S.; LUKOYANOVA, M.A.; OPARIN, A.I.

Cytochrome system in the cytoplasmic membranes of *Micrococcus lysodeikticus*. *Biokhimiia* 25 no. 3:482-486 My-Je '60. (MIRA 14:4)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R.,
Moscow.

(MICROCOCCUS) (CYTOCHROMES)

GEL'MAN, N.S.; ZHUKOVA, I.G.; OPARIN, A.I., akademik

Oxidation of L-malic acid and reduced diphosphopyridinenucleotide
in the cytoplasmic membrane of *Micrococcus lysodeikticus*. Dokl.
AN SSSR 133 no.5:1209-1212 1960. (MIRA 13:8)

1. Institut biokhimii im. A.N. Bakha Akademii nauk SSSR.
(Malic acid)
(Nucleotides)
(Micrococcus)
(Oxidation, Physiological)

GEL'MAN, N.S.; ZHUKOVA, I.G.; OPARIN, A.I., akademik

Effect of desoxycholate on the oxidation of reduced diphosphopyridine nucleotide, L-malic and L-lactic acids in the cytoplasmic membrane of *Micrococcus lysodeikticus*. Dokl. AN SSSR. 135 no.1:200-203 N '60.
(MIRA 13:11)

(MICROCOCCUS) (OXIDATION, PHYSIOLOGICAL) (BACTERIOLYSIS)

17.1156

S/020/60/135, 006/075.07
B016/B060

5 4500 1256, 1273 001-1

AUTHORS: Serebrovskaya, K. B. and Oparin, A. I., Academician

TITLE: A Coacervate System Containing RNA and Chlorophyll

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 6,
pp. 1532-1535

TEXT: The authors report on their attempts of working out suitable methods of introducing chlorophyll in coacervate drops. In this way they wanted to bring about photochemical reactions in these drops. An artificial complex was produced by way of pulverizing equal parts by weight of crystalline chlorophyll (supplied by V. B. Yevstigneyev and V. A. Gavrilov) and ribonucleic acid (RNA). This mixture was dissolved in water or (with more advantage) in a borate buffer (pH 7). The potassium tetraborate used for this purpose was synthesized following instructions of the Institut khimicheskikh reaktivov (Institute of Pure Reagents). Fig. 1, Curve 3 shows the spectra of this mixture beside the spectra of a real chlorophyll solution in ethanol (Curve 1) and chlorophyll in the live leaf (Curve 2). It is observed from a comparison of these curves that the chlorophyll-RNA

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A Coacervate System Containing RNA and ChlorophyllS/O20/60/135/006/035/037
B016/B060

compound rapidly loses the sharp peaks in the 420 - 430 m μ and 650 - 660 m μ ranges, as are typical of real solutions. A coacervate was prepared from the mentioned mixture in the presence of serum albumin and potassium oleate. The chlorophyll partly acquires a red fluorescence in the coacervate. This possibly occurs due to its bond with both the protein and the lipid. Summing up: 1) As a consequence of chlorophyll mixing with RNA in the dry state chlorophyll becomes soluble in water and salt solutions. 2) The spectrum of the chlorophyll-RNA complex prepared in this way differs from the spectra of real ethanolic chlorophyll solutions and colloidal solutions (Fig. 2): the absorption maximum is shifted toward the longwave range and thus comes near the chlorophyll spectrum in chloroplasts (Fig. 1, 2). 3) A prior treatment with ascorbic acid is necessary to pass chlorophyll from the compound with RNA into an organic solvent (Fig. 3). 4) The chlorophyll-RNA complex entirely lacks the fluorescence which is typical of the initial chlorophyll (Fig. 1 : 3). 5) The said complex forms, with serum albumin and with potassium oleate, a coacervate differing from the initial solution as to its properties. It is weakly fluorescent. The pigment cannot be extracted from the complex with organic solvents even after treatment with ascorbic acid. Papers by N. M. Sisakyan and

Card 2/3

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OFARIN, A.I., akademik (SSSR)

Life in space. Mir nauki 5 no.4:2-6 '61.
(SPACE BIOLOGY)

(MIRA 1961)

OPARIN, A.I.; SEREBROVSKAYA, K.B.; AUERMAN, T.L.

Synthesizing activity of the polynucleotide phosphorylase of
Micrococcus lysodeikticus in solution and in coacervate systems.
Biokhimiia 26 no.3:499-504 My-Je '61. (MIRA 14:6)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R.,
Moscow.

(MICROCOCCUS)

(POLYNUCLEOTIDE PHOSPHORYLASE)

OPARIN, A.I.

Organize new industries on the basis of latest achievements in
biochemistry. Izv. AN SSSR. Ser. biol. 26 no.5:664-668 S-0 '61.
(MIRA 14:9)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R.,
Moscow.

(GENETICS)

OPARIN, A.I., akademik

Origin of life. Nauka i zhizn' 28 no.11:48-49 N '61.

(MIRA 14:12)

(Life--Origin)

OPARIN, A.I., akademik

The universe and life. Priroda 50 no.7:5-12 J1 '61.

(Biology) (Space biology)

(MIPA 14:6)

OPARIN, A.I., akademik

Biochemistry and life. Priroda 50 no.12:8-15 D '61.

(Biochemistry--Congresses)

(MIRA 14:12)

OPARIN, A. I., Director,

"Organic geochemical aspects of the origin of life on earth"
To be presented at the Geochemical Society International
Meeting on Organic Processes, 10-12 Sep 1962.

Institute of Biochemistry imeni A. N. Bakh, Moscow

OREKHOVICH, Vasilii Nikolayevich; SHPIKITER, Vadim Olegovich;
OPARIN, A.I., akademik, otv. red.; MATVEYENKO, T.A., red.
Izd-va; GUS'KOVA, O.M., tekhn. red.

[Biological role, characteristics and structure of soluble collagenlike proteins (procollagens); read at the 18th annual Bakh Lecture on March 17, 1962] Biologicheskoe znachenie, svoistva i stroenie rastvorimykh kollagenopodobnykh belkov (prokollagenov); dolozheno na vosemnadtsatom ezhegodnom Bakhovskom chtenii 17 marta 1962 g. Moskva, Izd-vo Akad. nauk SSSR, 1962. 29 p. (Bakhovskie chteniia, no.18) (MIRA 15:12)
(Collagen)

OPARIN, A.I., akademik; BOKUCHAVA, M.A.

Problems of biochemistry in tea production. Biokhim. zhurn., proizv.
no.9:3-5 '62. (MIRA 16:4)

1. Chlen-korrespondent AN GruzSSh (for Bokuchava).
(tea research)

OPARIN, A.I., akademik

Organic substances of meteorites. Starsh.-serzh. no.9:30-31 S
'62. (MIRA 15:11)
(Meteorites) (Life--Origin)

SEREBROVSKAYA, K.B.; YEVSTIGNEYEV, V.B.; GAVRILOVA, V.A.; OPARIN, A.I.

Photosensitizing activity of chlorophyll in coacervates. Biofizika 7
no.1:34-41 '62. (MIRA 15:5)

1. Institut biokhimi imeni A.N.Bakha AN SSSR, Moskva.
(CHLOROPHYLL) (COACERVATES)

OPARIN, A.I.

Fifth International Biochemical Congress. Izv. AN SSSR. Ser.
biol. 27 no.1:141-152 Ja-F '62. (MIRA 15:3)
(BIOCHEMISTRY--CONGRESSES)

OPARIN, A.I., akademik

Metabolism is the main thing. Nauka i zhizn' 29 no.4:8 Ap '62.
(MIRA 15:7)

(METABOLISM)

OPARIN, A.I., akademik

International Conference of Representatives of Science and
Institutes of Higher Education. Vest. AN SSSR 32 no.12:68-
70 D '62. (MIRA 15:12)

1. Witse-president Vsemirnoy federatsii nauchnykh rabotnikov.
(Research—Congresses) (Education—Congresses)

OPARIN, A., akademik

Universe and life. Av.1 kosm. 45 no.10:11-15 '62. (MIRA 15:10)
(Life on other planets)

OPARIN, A.I. akademik

Life in outer space. Priroda 51 no.9:21 S '62.
(Space biology)

(MIRA 14:9)

OPARIN, A.I., akademik; YEFREINOVA, T.N.; LARIONOVA, T.I.; DAVYDOVA, I.M.

Synthesis and decomposition of starch in coacervate drops.
Dokl. AN SSSR 143 no.4:980-983 Ap '62. (MIRA 15:3)
(Starch) (Coacervates)

OPARIN, Aleksandr Ivanovich, akademik; ISAYEV, V.A., red. izd-va;
SIMKINA, G.S., tekhn. red.

[Life as a form of the movement of matter] Zhizn' kak forma
dvizheniia materii. Moskva, Izd-vo Akad. nauk SSSR, 1963. 47 p.
(MIRA 16:6)

(LIFE (BIOLOGY))

CFARIN, A.I., akad. nauk; SEMENOVSKIY, A.N., prof.; NAUMOV, N.F.,
prof.; KOVAL'SKIY, N.V.; YUKOVA, I.L., dots.; PLATONOV, G.V.,
prof.; KAGANOV, V.M.; FURMAN, A.Ye., dots.; MEDVEDEV,
N.V., prof.; ZAKHAROV, V.F., kand. biol. nauk;
ZHUKOV-VEREZHIKOV, N.N.; BONDARENKO, P.P., prof.;
MAYSKIY, I.N., prof.; TRIBULEV, G.P., dots.;
TSAREGORODTSEV, G.I., dots.; DOBROKHVALOV, V.P., kand.
biol. nauk; YAZDOVSKIY, V.I., prof.; VIKTOROVA, V., red.;
CHEREMNYKH, I., mlad. red.; ULANGVA, L., tekhn. red.

[Studies on the dialectic of living nature] Ocherk dia-
lektiki zhivoi prirody. Moskva, Sotsekgiz, 1963. 527 p.
(MIRA 16:12)

1. Chlen-korrespondent Vsesoyuznoy akademii sel'skokho-
zyaystvennykh nauk imeni V.I. Lenina (for Koval'skiy).
2. Deystvitel'nyy chlen AMN SSSR (for Zhukov-Verezhnikov).
(Biology--Philosophy)

S/254/63/000/002/001/003
D251/D308

A.I.
AUTHOR: Oparin, S. Academician

TITLE: Life in the universe

PERIODICAL: Nauka i zhyttya, no. 2, 1963, 20-22

TEXT: The author outlines some concepts of the new science of astro-biology, developed in particular by H.A. Tykhov, corresponding member of the AS UkrSSR. The basic problem is to determine the conditions necessary for life and to ascertain the prevailing conditions on individual planets. The possibility that life may exist on a given planet does not actually prove the existence of life there. One may assume the formation of hydrocarbons on other planets. Methane and other hydrocarbons are, for example, to be found on Jupiter and Saturn, and certain meteorites have been shown to contain carbon compounds of high molecular weights. Analysis of the light from Mars shows the presence of organic polymers, and many scientists maintain that they are present on the moon. This possibility must be taken into account in planning possible lunar expeditions.

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Life in the universe

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tions, although, in view of the lack of water on the moon, further evolution seems unlikely. The physical conditions on Mars are outlined and it is concluded that although these differ considerably from terrestrial standards, the planet may possess some forms of life peculiar to itself. The final answer to the problem can only be given by inter-planetary exploration. There is 1 figure.

Card 2/2

AL
OPARIN, O., akademik

Facts, surmises, and assumptions. Nauka i zhyttia 12 no.2:
21-22 F '63. (MIRA 16:4)

(Life on other planets)

OPARIN, A.I.

Life in the universe. Izv. AN SSSR Ser. biol. 28 no.1:3-8 Ja
F'63. (MIRA 16:8)

1. Institute of Biochemistry, Academy of Sciences of the
U.S.S.R., Moscow.
(SPACE BIOLOGY)

GEL'MAN, N.S.; ZHUKOVA, I.G.; OPARIN, A.I.

Preparation of dehydrogenases of l-malic acid and the reduced form of diphosphopyridine nucleotide from cytoplasmic membranes of *Micrococcus lysodeikticus*. *Biokhimiia* 28 no.1:122-127 Ja-F '63. (MIRA 16:4)

1. Institute of Biochemistry, Academy of Sciences of the U.S.S.R., Moscow.
(CODEHYDROGENASE) (MICROCOCBUS) (MALIC DEHYDROGENASE)

OPAKIN, A.I.; SEREMOVSKAYA, E.B.; PANTSKEVA, S.N.; VASILYINA, V.I.

Enzymatic synthesis of polyadenic acid in prokaryote cells.
Biokhimiya 22 no.4:671-675 1973. 1-Ag 193. 1973. 193.

1. Institut Biokhimi imeni Bakra, AN SSSR, Moskva.

OPARIN, A.I., akademik

Life in the universe. Priroda 52 no.2:14-21 '63.

(Life on other planets) (Life—Origin)

(MIRA 16:2)

OPARIN, A.I., akademik; SEREBROVSKAYA, K.B.

Formation of coacervate drops in the synthesis of polyadenylic acid by polynucleotide phosphorylase. Dokl.AN SSSR 148 no.4: 943-944 F '63. (MIRA 1614)

(Coacervates) (Adenylic acids)
(Polynucleotide phosphorylase)

OPARIN, A. I., akademiki STCYANOVA, I G ; SEREBROVSKAYA, K B ;
NEKRASOVA, T. A.

Electron microscopic study of coacervates. Dokl AN SSSR
150 no. 3: 684-685 My '63. (MIRA 16:6)

1. Institut biokhimi im. A. N. Bakha AN SSSR.
(Coacervates) (Electron microscopy)

OPARIN, A.I., akademik; SEREBROVSKAYA, K.B.; PANTSKHAVA, S.A.

Oxidation-reduction processes in coacervate drops; dehydration
of DPN - H(NAD - N). Dokl. AN SSSR 151 no.1:234-236 J1 '63.
(MIRA 16:9)

1. Institut biokhimi im. A.N.Bakha AN SSSR.
(Coacervates) (Oxidation-reduction reaction) (Nucleotides)

GrAHIN, A.I., akademik

Origin of sociological systems: a conference in the USSR
states. Vest. AN SSSR 34 no. 5: 3-115. Moscow, 1974

OPARIN, A.I., akademik

Origin of metabolism and its evolution. Priroda 53 no. 29-33 '64.
(MIRA 17:6)

OPARIN, A.I., akademik; SEREBROVSKAYA, K.B.; VASIL'YEVA, N.V.;
BALAYEVSKAYA, T.O.

Formation of coacervates from polypeptides and polynucleotides.
Dokl. AN SSSR 154 no.2:471-472 Ja'64. (MIRA 17:2)

BIRYUZOVA, V. I.; LUKOYANOVA, M. A.; GEL'MAN, N. S.; QPARIN, A. I.,
akademik

Subunits in the cytoplasmatic membranes of *Micrococcus lysodeikticus*.
Dokl. AN SSSR 156 no. 1:198-199 My '64. (MIRA 17:5)

1. Institut biokhimiim. A. N. Bakha AN SSSR i Institut radiat-
sionnoy i fiziko-khimicheskoy biologii AN SSSR.

ACCESSION NR: AP4042802

B/0020/64/157/003/0729/0732

AUTHOR: El'piner, I. Ye.; Sutokskaya, I. V.; Oparin, A. I., Academician

TITLE: On the effect of ultrasonic waves upon the structure and antibiotic activity of gramicidin C

SOURCE: AN SSSR. Doklady*, v. 157, no. 3, 1964, 729-732

TOPIC TAGS: Gramicidin C, ultrasonic wave, ultrasound effect, chemical ultrasound effect, antibiotic activity, gramicidin structure, Bac. mycoides, Escherichia coli, aromatic aminoacid, aminoacid analysis, glioxalic acid, deamination, peptide, argon, electrophoresis

ABSTRACT: This work was based on earlier studies on the ultrasonic effect upon structure and function of protein and polypeptide molecules with biocatalytic properties. Under the influence of ultrasound the gramicidin C molecules undergo a specific chemical transformation. This is accompanied by the appearance of organic matter in the solution, with bactericidal properties against Bac. mycoides and Escherichia coli, the microorganisms used for this study. The gramicidin molecule configuration is described. The product was used in 0.2, 0.3 and 0.5% diluted

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ACCESSION NR: AP4042802

ethanol solution. Ultrasonic waves were applied under air, oxygen or argon at 600 kilocycles and about 18 watt/cm² for 0.5 - 12 hours, after which the aminoacid composition was analyzed by chromatography, spectroscopy and electrophoresis. In the presence of argon or oxygen a strong smell developed. No significant decomposition of the aromatic aminoacids of the gramicidin molecule was observed by spectrophotometric or chromatographic methods. The electrophoretic test gave an additional spot with bromophenol blue. Glioxalic acid was also detected. It is assumed that side groups of peptides (leucine, ornithine) were detached, with desamination of the terminal NH₂ groups, and that the increased bactericidal activity was caused by a newly formed, as yet unidentified compound. This increased activity was not observed when ultrasound was applied in the presence of hydrogen. These findings point to a possible new source of biologically active compounds. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biophysics, Academy of Sciences, SSSR)

SUBMITTED: 09Mar64

ENCL: 00

Card 2/3

OPARIN, A.I., akademik; GEL'MAN, N.S.; ZHUKOVA, I.G.; SHVETS, V.I.;
CHERGADZE, Yu.N.; TSFASMAN, I.M.

Lipids of the dehydrogenase preparation from the cytoplasmic membranes
of *Micrococcus lysodeicticus*. Dokl. AN SSSR 152 no.1:228-230
S '63. (MIRA 16:9)

1. Institut biokhimi im. A.N.Bakha AN SSSR; Institut tonkoy
khimicheskoy tekhnologii im. M.V.Lomonosova i Institut biologi-
cheskoy fiziki AN SSSR.

(LIPIDS) (DEHYDROGENASES) (BACTERIA, PATHOGENIC)

ANASTASAT, . . .; KAMEIAN, S.; ALGHEGA, S.; VISEVICIANI, V.; Ciocoiaru, T.;
STARI, A.; STOIICA, V.

Eticonamide ascorbate -- a new solution for intravenous infusions
in the treatment of tuberculosis. Truzlica 32 no.8:663-664. Ag '64.

. . . 7 Institutul de Cercetari si Farmaceutica din cadrul Institutului de Fiziolocicne, Buka-
reszt -- Romania.

OPARIN, A.I., akademik; KHART'YAN, Ye.F.; GEL'MAN, N.S.

Localization of hydrogenases and their relation to oxygen in
cells of *Lactobacterium pentoceticum*. Dokl. AN SSSR 157 no.1:
211-214 J1 '64 (MIRA 17:8)

1. Institut biokhimi im. A.N. Bakha AN SSSR.

OPARIN, A.I., akademik; KRETOVICH, N.I.

Sixth International Congress of Biochemistry. Vest. AN SSSR 3.
no.1:73-75 Ja 1965. (MIRA 18:1)

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OPARIN, A.I., akademik: GELIMAN, N.S.; CHEKIN, I.G.

Effect of lipase and phospholipase A on the dephosphorylation
in an enzymatic preparation from *Micrococcus lysodeikticus* membra-
nes. Dokl. AN SSSR 1971, no. 11: 37-40. Mr 165.

1. Institut Steklov im. V.I. Pavlov AN SSSR.

METLITSKIY, Lev Vladimirovich; OPARIN, A.I., akademik, otv. red.

[Biochemistry in harvest protection; biological principles of storing potatoes, vegetables and fruit] Biokhimiia na strazhe urozhaia; biokhimicheskie osnovy khraneniia kartofelia, ovoshchei i plodov. Moskva, Nauka, 1965. 182 p.
(MIRA 18:7)